

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
24 June 2004 (24.06.2004)

PCT

(10) International Publication Number
WO 2004/052912 A1

(51) International Patent Classification⁷: **C07J 31/00**,
71/00

[IT/IT]; Via E. Duse, 15, I-40127 Bologna (IT). **FORTU-
NATO, Giuseppe** [IT/IT]; Via Don Milani, 1, I-28069 Tre-
cate (IT).

(21) International Application Number:
PCT/EP2003/013908

(74) Agent: **GERVASI, Gemma**; Notarbartolo & Gervasi
S.p.A., Corso dei Porta Vittoria, 9, I-20122 Milano (IT).

(22) International Filing Date: 8 December 2003 (08.12.2003)

(25) Filing Language: English

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU,
AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU,
CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE,
GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR,
KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK,
MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT,
RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR,
TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(26) Publication Language: English

(30) Priority Data:
MI2002A002606 9 December 2002 (09.12.2002) IT

(71) Applicant (*for all designated States except US*):
FARMABIOS S.r.l. [IT/IT]; Via Pavia, 1, I-27027
Gropello Cairoli (IT).

(84) Designated States (*regional*): ARIPO patent (BW, GH,
GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),
Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),
European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE,
ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE,
SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA,
GN, GQ, GW, ML, MR, NE, SN, TD, TG).

(71) Applicants (*for US only*): **BORIANI, Maria, Adele**
(heiress of the deceased inventor) [IT/IT]; Via Emilia
Levant 170, 40139 Bologna (IT). **DA COL, Stefano** (heir
of the deceased inventor) [IT/IT]; Via Emilia Levante 170,
I-40139 Bologna (IT).

Declaration under Rule 4.17:

— *of inventorship (Rule 4.17(iv)) for US only*

(72) Inventor: **DA COL, Marco** (deceased).

(72) Inventors; and

Published:

— *with international search report*

(75) Inventors/Applicants (*for US only*): **CAINELLI, Gian-
franco** [IT/IT]; Via Gramsci, 214, I-40013 Castelmaggiore
(IT). **UMANI RONCHI, Achille** [IT/IT]; Via Gaudenzi,
4, I-40137 Bologna (IT). **SANDRI, Sergio** [IT/IT]; Via
Pistocchi, 13, I-47100 Forlì (IT). **CONTENTO, Michele**

*For two-letter codes and other abbreviations, refer to the "Guid-
ance Notes on Codes and Abbreviations" appearing at the begin-
ning of each regular issue of the PCT Gazette.*

(54) Title: 17.BETA- (ALPHA-HYDROXY) -ESTERS OF ANDROSTANES AS INTERMEDIATES FOR THE PREPARATION FOR THE PREPARATION OF 17.BETA.-FLUORINATED-ANDROSTANE ESTERS

(57) Abstract: Process for the preparation of polyhalogenated steroids, in particular of androstanic fluoro derivatives corticosteroids by means of the formation of new androstanic S-hydroxy alkyl or aralkyl-17-carbothioate intermediates.